WHAT IS CLAIMED IS:

1. A method for manufacturing a memory device, comprising:

forming a first electrode;

disposing a memory element over the first electrode, the memory element comprising a sulfide derived from sulfur dioxide; and

forming a second electrode spaced apart from the first electrode.

2. The method of claim 1, wherein the first electrode comprises copper.

3. The method of claim 1, wherein disposing the memory element includes reacting the sulfur dioxide with hydrogen.

4. The method of claim 3, further including using a sufficient amount of hydrogen to react with at least 90% of the oxygen, wherein water is a reaction product.

5. The method of claim 1, wherein disposing the memory element includes decomposing the sulfur dioxide to form a layer of cuprous sulfide.

6. The method of claim 1, wherein disposing the memory element includes decomposing the sulfur dioxide in a plasma etch chamber.

7. The method of claim 6, wherein disposing the memory element includes flowing the sulfur dioxide into the plasma etch chamber at a flow rate ranging from about 50 sccm to about 1,000 sccm.

8. The method of claim 6, wherein disposing the memory element includes decomposing the sulfur dioxide in a plasma etch chamber at a power level of less than ten kilo-Watts.

9. The method of claim 6, wherein disposing the memory element includes maintaining the reaction temperature in the plasma etch chamber from about 20 degrees Celsius to about 300 degrees Celsius.

10. The method of claim 1, wherein the sulfide is Cu_xS, where $1 \leq x \leq 2$.

11. A method for manufacturing a memory element, comprising:

providing a first copper substrate having a major surface;

decomposing sulfur dioxide in the presence of hydrogen to form a copper sulfide Cu_xS film on the major surface, where $1 \leq x \leq 2$; and

coupling a second copper substrate to the cuprous sulfide film.

12. The method of claim 11, wherein decomposing the sulfur dioxide includes maintaining the reaction temperature from about 20 degrees Celsius to about 300 degrees Celsius.

13. The method of claim 11, further including using a sufficient amount of hydrogen to react with at least 90% of the oxygen, wherein water is a reaction product.

14. A method for manufacturing a semiconductor component, comprising:

providing a semiconductor substrate having a semiconductor device formed therefrom;

forming a first electrode over the semiconductor substrate and electrically coupled to the semiconductor device;

disposing a memory element over the first electrode, wherein the memory element comprises sulfur derived from sulfur dioxide; and

forming a second electrode coupled to the memory element.

15. The method of claim 14, wherein disposing the memory element over the first electrode comprises decomposing the sulfur dioxide in a plasma etch chamber.

16. The method of claim 14, wherein disposing the memory element over the first electrode includes disposing copper sulfide, Cu_xS, where $1 \leq x \leq 2$.

17. A method for forming a memory material, comprising:
reacting hydrogen sulfide with copper to form a copper sulfide, Cu_xS, where $1 \leq x \leq 2$.

18. The method of claim 17, further including reacting sulfur dioxide with hydrogen to form the hydrogen sulfide.

19. The method of claim 18, wherein reacting the sulfur dioxide with the hydrogen sulfide is performed in one of a plasma reactor chamber or a thin film deposition chamber.

20. The method of claim 18, wherein reacting the hydrogen sulfide with the copper is performed in one of a plasma reactor chamber or a thin film deposition chamber.

21. The method of claim 18, wherein x is one of 1 or 2.

22. The method of claim 17, further including reacting the hydrogen sulfide with the copper in an inert gas.

23. The method of claim 22, wherein the inert gas is argon.